

REMARKS

Claims 34-38, 40, 41, 43-46, and 48 are pending. Claim 37 has been indicated as allowable. Although no claims have been amended, a complete listing of the claims is provided above for the Examiner's convenience.

Rejections under 35 U.S.C. § 102

Claims 46, 48, and 49 stand rejected under 35 U.S.C. § 102(b) in light of U.S. Patent No. 4,984,061 to Matsumoto ("Matsumoto"). As the PTO provides in MPEP § 2131, "[t]o anticipate a claim, the reference must teach every element of the claim...." (emphasis added). Therefore, each reference applied under 35 U.S.C. § 102 must disclose all of the elements of the claims to sustain the rejection. Accordingly, Applicant respectfully traverses these rejections on the following grounds.

Claim 46 recites, in part, a third metal layer covering the second metal layer, wherein the third metal layer surrounds and rises above each of the vertical structures.

Applicant submits that Matsumoto fails to teach or suggest at least the above-recited element of claim 46. More specifically, to anticipate this element of claim 46, the Office action relies on the metal layer 25 (Figs. 1 and 2). However, the metal layer 25 does not surround each of the vertical structures as required by claim 46. Accordingly, Matsumoto fails to teach or suggest every element of claim 46 as required by MPEP § 2131, and claim 46 is allowable over the cited reference. Claims 48 and 49 depend from and further limit claim 46 and are allowable for at least the same reason as claim 46.

In addition, claim 48 recites "[t]he bond pad structure of claim 46 wherein the second metal layer is substantially the same thickness over both the vertical structures and the exposed portions of the first metal layer." To anticipate claim 48, the Office action relies on the metal layer 22 (Figs. 1 and 2). However, Figs. 1 and 2 of Matsumoto clearly illustrate that the metal layer 22 is not "substantially the same thickness over both the vertical structures and the exposed portions of the first metal layer," as the metal layer 22 is clearly substantially thicker where it overlies the first metal layer than where it overlies the vertical structure 20. Accordingly, Matsumoto fails to teach

or suggest claim 48 as required by MPEP § 2131, and claim 48 is allowable over the cited reference for at least this reason.

Rejections under 35 U.S.C. § 103

Claims 34, 35, 38, 40, 41, 44, 45, and 48 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,002,179 to Chan ("Chan") in combination with U.S. Patent No. 6,448,650 to Saran et al. ("Saran"). Claims 36 and 43 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Chan and Saran in view of U.S. Patent No. 5,994,762 to Suwanai ("Suwanai"). As provided in MPEP § 2143, "[t]o establish a prima facie case of obviousness, ... the prior art reference (or references when combined) must teach or suggest all the claim limitations." Furthermore, under MPEP § 2142, "[i]f the examiner does not produce a prima facie case, the applicant is under no obligation to submit evidence of nonobviousness." It is submitted that the Office action fails to factually support a prima facie case of obviousness based on the cited references for the following reasons.

Claims 34-36 and 38

Claim 34 recites, in part, a barrier layer formed of tantalum nitride over said passivating layer and in said openings and a conducting pad formed within said openings and over said interlocking grid structures and over said barrier layer, whereby an upper surface of said conductive pad provides improved adhesion for subsequently formed bonds.

Applicant submits that Chan fails to teach or suggest at least the above-recited elements of claim 34. More specifically, the Office action describes only "a metal barrier ... covering the passivation layer and conforming to a shape separated by openings in said passivating layer." (Office action, pgs. 3-4). It is unclear whether the "metal barrier" to which the Office action is referring is the element 32, 72, 92 of Chan (referred to as a "conducting pad" (col. 3, lines 11-12; col. 4, lines 54-55; col. 5, lines 47-48), as well as whether the cited "metal barrier" is being used to render obvious the barrier layer or the conducting pad of claim 34. Regardless of the element for which the metal barrier is being used, Chan describes only the single layer (32 for Fig. 3; 72 for

Fig. 7; and 92 for Fig. 9) and fails to teach or suggest both a barrier layer and a conducting pad meeting the requirements of claim 34. Accordingly, at least one of these elements is not taught or suggested by Chan, and Saran fails to supply the deficiencies of Chan. Accordingly, Applicant submits that the combination of Chan and Saran fails to teach or suggest every element of claim 34 as required by MPEP § 2143, and claim 34 is allowable over the cited references. Claims 35, 36, and 38 depend from and further limit claim 34 and are allowable for at least the same reason as claim 34.

Claims 40, 41, 43, 44, and 45

Claim 40 recites, in part, a metal barrier layer covering the passivation layer and the exposed portions of the metal wiring layer, wherein the metal barrier layer conforms to a shape provided by the island structures and does not completely fill the spaces between the island structures; and a metal pad layer covering the metal barrier layer, wherein the metal pad layer fills the spaces between the island structures not filled by the metal barrier layer and rises above the island structures.

Applicant submits that Chan fails to teach or suggest at least the above-recited elements of claim 40 for at least two separate reasons. First, the Office action describes "a metal barrier ... covering the passivation layer and conforming to a shape separated by openings in said passivating layer." (Office action, pgs. 3-4). It is unclear whether the "metal barrier" to which the Office action is referring is the element 32, 72, 92 of Chan, as well as whether the cited "metal barrier" is being used to render obvious the metal barrier layer or the metal pad layer of claim 40. Regardless of the element for which the metal layer is being used, Chan describes only the single layer (32 for Fig. 3; 72 for Fig. 7; and 92 for Fig. 9) and fails to teach or suggest both a metal barrier layer and a metal pad layer as required by claim 40. Second, the metal layer 32, 72, 92 of Chan clearly completely fills the spaces between the island structures. If the Office action is referring to the metal layer 32, 72, 92 of Chan as the barrier layer of claim 40, then Chan fails to teach or suggest the barrier layer as claim 40 specifically states that the "metal barrier layer ... does not completely fill the spaces between the island structures."

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Accordingly, Chan fails to teach or suggest at least one of these elements of claim 40, and Saran fails to supply the deficiencies of Chan. Accordingly, Applicant submits that the combination of Chan and Saran fails to teach or suggest every element of claim 40 as required by MPEP § 2143, and claim 40 is allowable over the cited references. Claims 41, 43, 44, and 45 depend from and further limit claim 40 and are allowable for at least the same reason as claim 40.

Conclusion

It is respectfully submitted that all the claims in the application are in condition for allowance. Should the Examiner deem that any further amendment is needed to place this application in condition for allowance, the Examiner is invited to telephone the undersigned at the below listed telephone number.

Respectfully submitted,

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